

OM-12: Road Weather Management Program

1-15 points

Goal: Plan, implement, and monitor road weather management (including snow and ice control) program to reduce environmental impacts with continued or better level of service.



Sustainability Linkage

Implementing an effective and efficient road weather management program supports all of the triple bottom line principles by improving safety, increasing mobility, reducing delay and traffic interruptions, increasing productivity of the labor force, and reducing impacts of materials used for management on the human and natural environments.

Background and Scoring Requirements

Background

Intelligent Transportation Systems (ITS)-related solutions are included in OM-13: Transportation Management and Operations and are not duplicated here.

Scoring Requirements

Requirement OM-12.1

2 points. Develop a Road Weather Management Program

A Road Weather Management Program (RWMP) includes strategies that can be used to mitigate the impacts of rain, snow, ice, fog, high winds, flooding, tornadoes, hurricanes, avalanches, and other inclement weather impact on traffic. The RWMP will vary in size and scope depending on the needs of the agency. It could be a combination of multiple documents that cover management of different conditions or different regions, or could be a single, consolidated document. For the purposes of evaluating this criterion, the agency should consider all applicable materials and respond according per the majority of their practices.

Requirement OM-12.2

2-3 points. Set Goals and Monitor Progress

To earn credit for this scoring requirement, the agency must have a Road Weather Management Plan as described in scoring requirement OM-12.1. Scoring is based on the following, cumulative elements. The first element must be accomplished to earn the second.

- **Requirement OM-12.2a**

2 points. Establish Quantifiable Metrics

Establish quantifiable performance metrics for the RWMP program. Measures could be based on level of service, amount of materials used per event, and other relevant parameters. Measures could be qualitative and/or quantitative.

- **Requirement OM-12.2b**

1 additional point. Monitor Progress and Demonstrate Sustainable Outcomes

Monitor progress towards goals for at least one year after goal establishment and show measurable advancement towards stated goals.

Requirement OM-12.3

1-3 points. Implement a Road Weather Information Systems

Roadway Weather Information Systems (RWIS) are a way to monitor pavement and weather conditions in real-time using sensors to measure atmospheric, pavement, and/or water level conditions. Atmospheric data include air temperature and humidity, visibility distance, wind speed and direction, precipitation type and rate, tornado or waterspout occurrence, lightning, storm cell location and track, as well as air quality. Pavement data include pavement temperature, pavement freezing point, pavement condition (e.g., wet, icy, flooded), pavement chemical concentration, and subsurface conditions (e.g., soil temperature). Water level data include tide levels (e.g., hurricane storm surge) as well as stream, river, and lake levels near roads. This data allows the operator to make the best decisions about how to respond, for example, when to apply chemicals, how much to apply, and what type of chemical to apply, thereby reducing the amount of salt and chemical applied and increasing its effectiveness.

The agency implements a RWIS which measures the weather and road conditions using sensors on the side of the road to track weather and road conditions to plan and implement the appropriate treatment actions. The RWIS should provide timely information on prevailing and predicted conditions to both transportation managers and motorists (e.g., posting fog warnings on Changeable Message Signs and listing flooded routes on web sites).

One of the following scores applies:

- **0 points.** The agency does not have an RWIS.
- **1 point.** The agency is testing an RWIS in only a few locations.
- **2 points.** The agency implements a RWIS in select areas identified, but has not implemented a system agency-wide.
- **3 points.** The agency implements a RWIS agency-wide in most or all areas identified vulnerable to weather conditions (e.g., mountain passes, high wind areas, bridges, etc.)

Requirement OM-12.4

1-2 points. Implement the Standards of Practice or Standard Operating Procedure (SOP) for Snow and Ice Control

Scoring is based on the following, cumulative elements. The first element must be accomplished to earn the second.

- **Requirement OM-12.4a**

1 point. Include Snow and Ice Control in RWMP

Have an RWMP that includes, at a minimum, the following elements specific to snow and ice control:

- Reducing salt use in environmentally sensitive areas
- Existence of an anti-icing program
- Conducting periodical training program for proper use of salt and chemicals
- Best Management Practice (BMP) for chemical storage facilities
- Proper storage of chemical and chemical-abrasive stockpiles
- Proper calibration of equipment
- Reducing cost and improving fuel efficiency by planning and optimizing routes

- **Requirement OM-12.4b**

- 1 additional point. Include Performance Standards to Demonstrate Sustainability**

- The agency's program includes performance standards that take into account sustainability, and demonstrate a reduction in materials and truck fuel usage.

- **Requirement OM-12.5**

- 2 points. Implement Materials Management Plan**

- Successful implementation of a Materials Management Plan to monitor quantities of salt applied and level of service (e.g., interstates bare and dry 1 hour after event) during and after an event; includes salt, chemicals (de-icing agents), sand, etc.

- **Requirement OM-12.6**

- 1-3 points. Implement a Maintenance Decision Support System**

- Develop a Maintenance Decision Support System (MDSS) to improve the effectiveness and efficiency of roadway weather treatments and implement best practices. The MDSS can be based on weather report monitoring or based on RWIS sensing technologies installed roadside or mounted on maintenance vehicles to measure and monitor the road conditions.

- One of the following scores applies:

- **0 points.** The agency does not have an MDSS.
 - **1 point.** The agency has MDSS processes that are not based on roadside or vehicle mounted sensing technologies.
 - **2 points.** The agency has MDSS processes that are based on either roadside or vehicle mounted sensing technologies.
 - **3 points.** The agency has MDSS processes that are based on both roadside and vehicle mounted sensing technologies.

Scoring Sources

The program is considered to have met this criterion if the requirements above can be reasonably substantiated through the existence of one or more of the following documentation sources (or equal where not available):

1. Road Weather Management Program, and related plans and programs.
2. Materials Management Plan, MDSS, and documentation of RWIS for the jurisdiction (state, county, city). A qualified plan should include quantitative goals for reductions in chloride and other chemical applications, reduction of plow truck mileage, and a description of the tools and hardware used to monitor and operate the snow and ice control activities. A qualifying plan shall outline specific strategies to be implemented by specific agencies or stakeholders to achieve the plan.
3. Annual reports of plan progress, including data supporting goal performance and actions taken during the previous period. Minutes of monthly or quarterly meetings of interagency stakeholders to demonstrate active efforts to implement the plan.